



Revisiting the solar tachocline: Average properties and temporal variations

H. M. Antia (Tata Institute), Sarbani Basu (Yale University)

(Submitted on 5 Jul 2011)

The tachocline is believed to be the region where the solar dynamo operates. With over a solar cycle's worth of data available from the MDI and GONG instruments, we are in a position to investigate not merely the average structure of the solar tachocline, but also its time variations. We determine the properties of the tachocline as a function of time by fitting a two-dimensional model that takes latitudinal variations of the tachocline properties into account. We confirm that if we consider central position of the tachocline, it is prolate. Our results show that the tachocline is thicker at higher latitudes than the equator, making the overall shape of the tachocline more complex. Of the tachocline properties examined, the transition of the rotation rate across the tachocline, and to some extent the position of the tachocline, show some temporal variations.

Subjects: **Solar and Stellar Astrophysics (astro-ph.SR)**
Journal reference: ApJ, 735, L45 (2011)
Cite as: **arXiv:1107.1004 [astro-ph.SR]**
(or **arXiv:1107.1004v1 [astro-ph.SR]** for this version)

Submission history

From: Sarbani Basu [[view email](#)]
[v1] Tue, 5 Jul 2011 23:58:33 GMT (42kb)

[Which authors of this paper are endorsers?](#)

Link back to: [arXiv](#), [form interface](#), [contact](#).

Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

Current browse context:

astro-ph.SR

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1107](#)

Change to browse by:

[astro-ph](#)

References & Citations

- [INSPIRE HEP](#)
([refers to](#) | [cited by](#))
- [NASA ADS](#)

Bookmark([what is this?](#))

